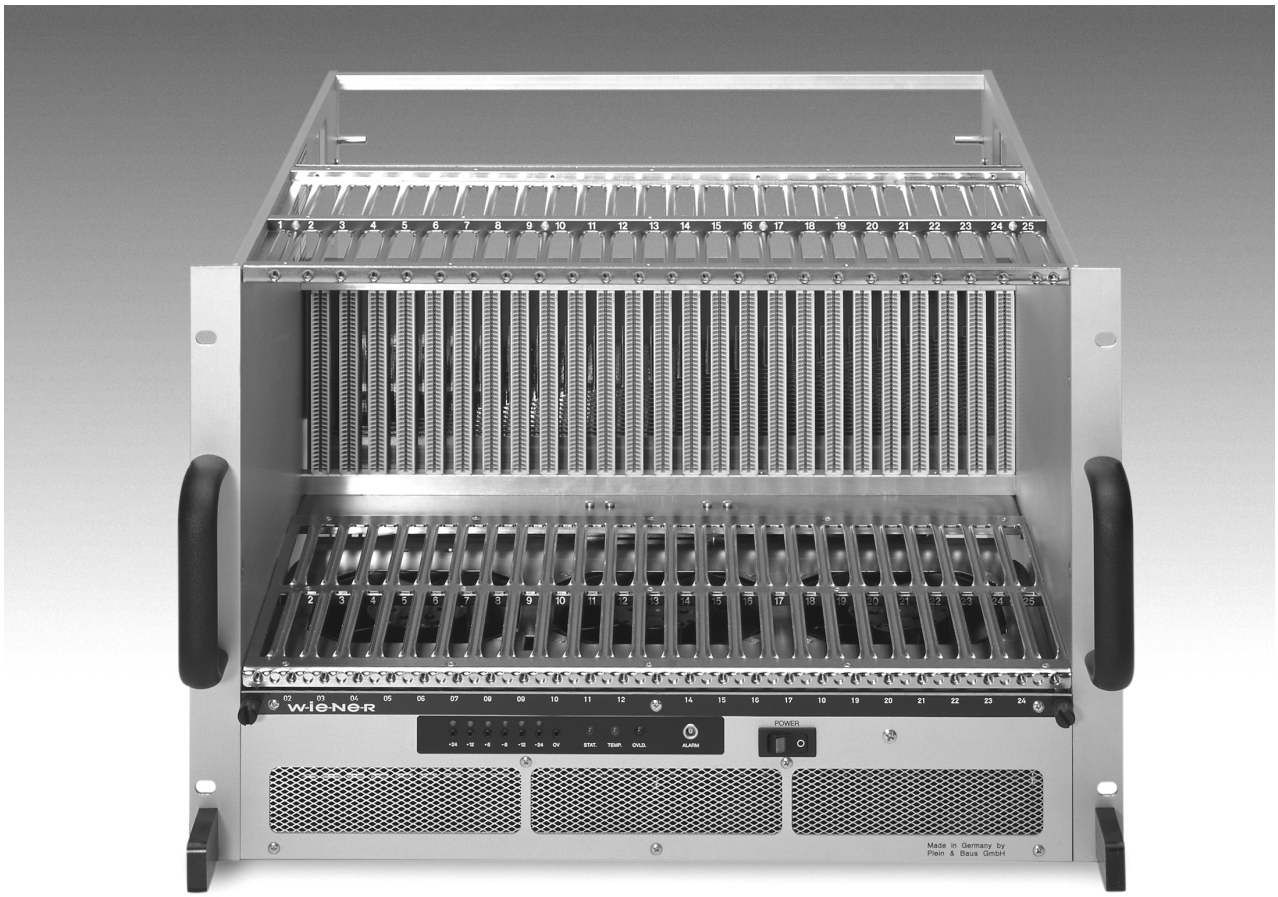


CAMAC Crate

+/-6V - +/-24V

User’s

and

Service- Manual

*00595.A0

General Remarks

The only purpose of this manual is a description of the product. It must not be interpreted as a declaration of conformity for this product including the product and software.

W-IE-NE-R revises this product and manual without notice. Differences of the description in manual and product are possible.

W-IE-NE-R excludes completely any liability for loss of profits, loss of business, loss of use or data, interrupt of business, or for indirect, special incidental, or consequential damages of any kind, even if **W-IE-NE-R** has been advises of the possibility of such damages arising from any defect or error in this manual or product.

Any use of the product which may influence health of human beings requires the express written permission of **W-IE-NE-R**.

Products mentioned in this manual are mentioned for identification purposes only. Product names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies.

No part of this product, including the product and the software may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means with the express written permission of **W-IE-NE-R**.

Table of contents:

1 General Information 1
1.1 -CAMAC bin 1
1.2 Fan Tray 1
1.3 UEP 10 power supplies 2
2 Operation, Function and Control 3
2.1 Fan tray operation and control 3
2.1.1 Function of fan tray switches and informations of the LED's 3
2.2 CAMAC Bin technical details 4
2.2.1 CAMAC Bin UEC 01 Pin assignment **PG 26** to power supply (PG27) 4
2.2.2 Pin assignment **PG 32** to fan tray **(PG 31)** 5
2.3 Power Supply UEP 10 6
2.3.1 Regulator boards UEP 10 6
2.3.2 Monitoring and alarming signals 7
2.3.3 Temperature sensors 7
2.3.4 Calibration of output voltage (UEP 10) 8
UEP 10 08 Has been not equipped with +/-12V outputs 8
APPENDIX A : Technical details UEP 10 08 8
APPENDIX B : Technical Documentation 10

1 General Information

All Wiener CAMAC Crates consist of a bin, a fan tray and a power supply. The power supplies are linear regulated.

1.1 -CAMAC bin

The CAMAC-bin ***UEC 01*** is a 7U CAMAC-crate for 25 CAMAC-modules according to CERN-CAMAC-NOTE 46-04. The module connectors have been centered by metal-guides, before touching the dataway plugs. Power supply plugged in and locked from rear side, fan tray from front side.

Dimensions (whd): 483mm (=19″) x 310mm x 525mm (with power supply 570mm)

1.2 Fan Tray

The CAMAC Crate is equipped with an UEL 01 fan tray which gives the most important monitoring information to the user.

The UEL 01 have three noise reduced 3 axial fans, which produce a maximum airflow of 380m³/h static pressure.

Control panel with mains on/off, mains lamp, test sockets with LED's for all 6 voltages and one for ground. All voltage bushes are overload protected by internal resistors.

Buzzer alarm and LED's for status bad, overload, overtemperature, whereas the status LED is operated by suffix "M" power supplies only!

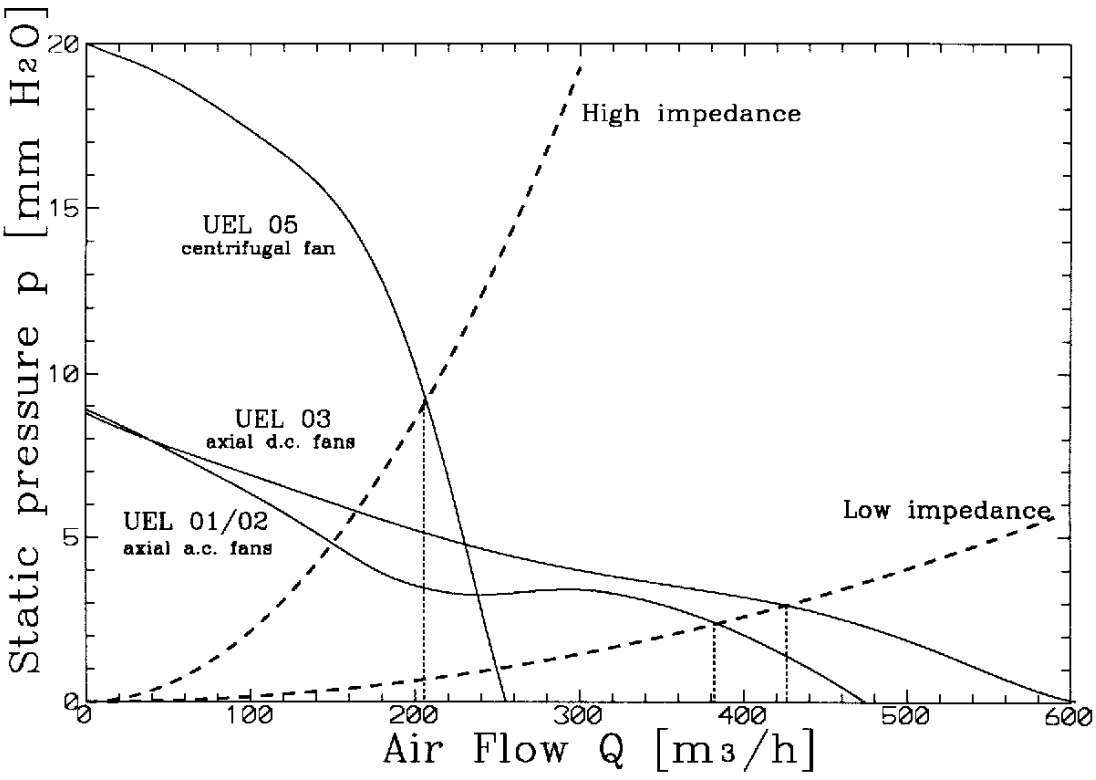
Weight 4 kg, approximately

UEL 01 unit can be operate in two different airflow modes. In the standard mode, the air is taken from the front.

A bottom side air flow can be reached by removing the bottom plate and mounting an optional front cover. The max. airflow is higher than 380m³/h and shows a good homogeneity.

The maximal air flow reached in this mode As depicted in fig. 1 the maximum air flow as well as the static pressure depends on the air resistance given by the plugged in modules.

Note, that this maximum value may be diminished by empty, not covered slots.



1.3 UEP 10 power supplies

The power supply is providing an additional 115 VAC output and fulfils the CERN-Standard comprehensively.

UEP 10 is **linear regulated**. The DC- output stages have been outfitted with foldback current characteristic in case of overcurrent.

A second circuit, overload, will protect the unit by activate the line breaker relay.

Primary the main transformer is protected be two 15A thermal circuit breaker, situated below the mains input connector.

The UEP 10 is cooled by fan with horizontal air flow. Exhaust is through the 24V heat sink (mains input side)

2 Operation, Function and Control

2.1 Fan tray operation and control

2.1.1 Function of fan tray switches and informations of the LED's

2.1.1.1 UEL 01

The UEL 01 fan tray is a simplified fan tray which conforms the CERN-Standard: The front panel is equipped with the following facilities:

Switches:

POWER on/off	main switch for ventilation and power supply

LED indicators:

STATUS	green LED lights, if all voltages are within the limit*
OVERTEMPERATURE	yellow LED lights if overtemperature occurs
OVERLOAD	red LED lights, if an over current is detected.
AC POWER	main switch integrated

*In combination with M monitoring power supply

UEL 01 is not equipped with a fan fail circuit.

2.2 CAMAC Bin technical details

2.2.1 CAMAC Bin UEC 01 Pin assignment **PG 26** to power supply (PG27)

Function	PG 26	Function	PG 26
chassis ground	65	+6V return	43-44-45-46-70
220V phase switch	74	-6V	47-48-49-50-67
220V phase mains	75	-6V return	51-52-53-54-71
220V neutral switch	76	+12V	55
220V neutral mains	77	+12V return	56
117VAC neutral	78	-12V	57
117VAC phase	79	-12V return	58
+200V	80	+24V	59
+200V return	82	+24V return	60
power failure	1	-24V	62
overload warning	2	-24V return	63
overheat warning	3	0V monitor	5
buzzer warning	4	Y1 current	7
Y2 sensing	28	Y1 current return	8
Y2 sensing return	27	Y2 current	10
+6V sensing	29	Y2 current return	11
+6V sensing return	26	clean earth	64
-6V sensing	30	+6V current	12
-6V sensing return	27	+6V current return	13
+12V sensing	31	-6V current	14
+12V sensing return	26	-6V current return	15
-12V sensing	32	+12V current	16
-12V sensing return	27	+12V current return	17
+24V sensing	33	-12V current	18
+24V sensing return	26	-12V current return	20
-24V sensing	34	+24V current	21
-24V sensing return	27	+24V current return	22

Y1	35	-24V current	23
Y1 return	36	-24V current return	24
Y2	37	Y1 sensing	25
Y2 return	38	Y1 sensing return	26
+6V	39-40-41-42-66	status warning	72

2.2.2 Pin assignment **PG 32** to fan tray **(PG 31)**

Function	**PG 32**		
Chassis ground	h	+12V current return	R
220V phase switch	AA	-12V current	S
220V phase mains	BB	-12V current return	T
220V neutral switch	CC	+24V current	U
220V neutral mains	DD	+24V current return	V
117V a.c. neutral	EE	-24V current	W
117V a.c. phase	FF	-24V current return	X
+200V	HH	+6V	a
overload warning	B	-6V	b
overheat warning	C	+12V	c
buzzer warning	D	-12V	d
+6V current	K	+24V	e
+6V current return	L	-24V	f
-6V current	M	0V voltage monitoring	k
-6V current return	N	0V voltage warning	j
+12V current	P	status warning	A

2.3 Power Supply UEP 10

2.3.1 Regulator boards UEP 10

The 4 control circuits for the ±6V, ±24V are of the similar design. Therefore the +24V channel may be representative:

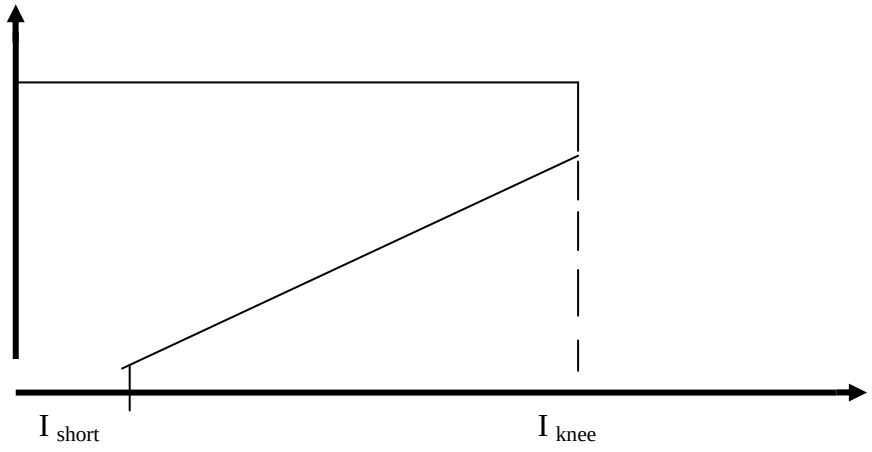
The power transistor T16 on the rear side heat sink are controlled by the amp U101, RGL 03- followed by 2 driving transistors Q 101, Q102 connected to an auxiliary voltage UH. Set point for the voltage control loop is derived from reference element D108 biased sense and sense return lines, while the output DC level is measured through the divider R119, R120 with voltage adjust pot R134.

Resistors R124 and R125 connect sense lines to the power path. In case of a failure (example: broken lines) uncontrolled voltage levels are avoided.

All outputs are short circuit protected by means of an electric circuit providing a fold back characteristic. This circuit works as follows:

The voltage drop across R110 is a value of output current. If this current increases above a certain level, defined by pot R136, Q105 becomes non conducting. In consequence Q104 begins to draw current from the voltage regulation loop an transistor Q101, Q102 and further the output power transistors reduce the output current. The output voltage of the power supply begins to drop. This drop reduces the bias of Q105 and due to this feedback output voltage and current of the supply shift along the fold back characteristic.

Voltage U



This procedure comes to an end at output voltage U = (nearly) 0 and I = I_{short}.
The parameters I_{knee} and I_{short} may be adjusted at R136 and R135.

Dual tracking:

For some applications of the power supply it is important that during turn on or turn off transients opposite voltages have the same absolute value. This feature is achieved by a small additional circuit: R117 and R 217 are of the same resistance. Therefore the diode D103 clamps the bases of Q107 and Q207 to nearly ±0.35V and both transistors are non conducting. Any nonsymmetrical output voltage shifts this bias to nonsymmetrical levels, one transistor becomes conductive and acts on the voltage control loop until both outputs are nearly symmetrical to the ground.

The total regulator circuit comprises 3 integrating control loops for:

output voltage

fold back characteristic

dual tracking

To avoid difficulties when servicing this circuit it is recommended to open jumper B3. The regulator boards are enabled through U103/203 when the soft start relay in HSP01 board has to be switched on (by 100Hz signal on UBW control board.)

2.3.2 Monitoring and alarming signals

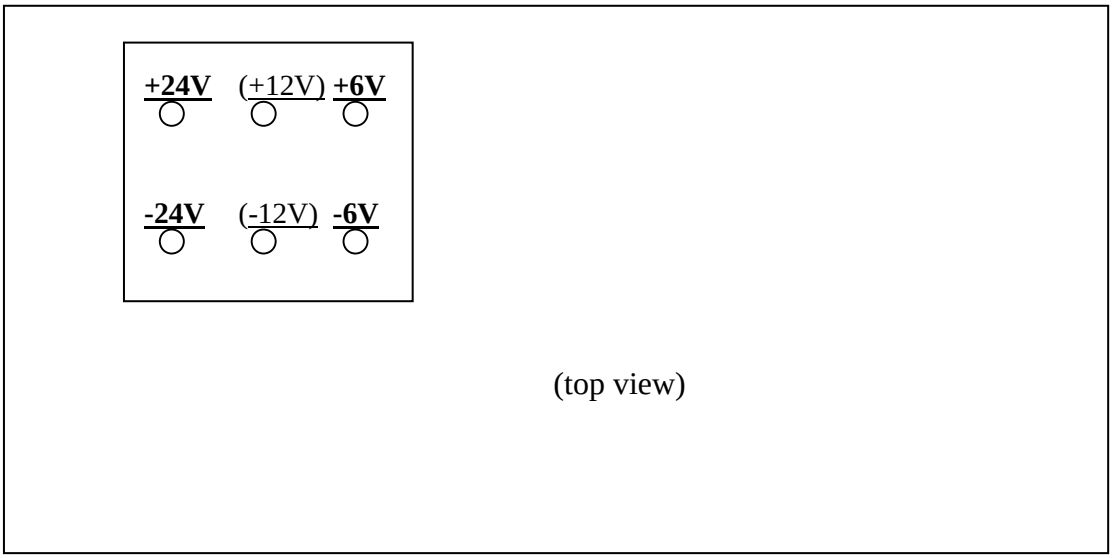
In case of over temperature a yellow LED lights and a buzzer sounds; Mains are switched off. In case of overload a red LED lights and a buzzer sounds.

2.3.3 Temperature sensors

All linear regulated power supplies are controlled with 4 independent temperature sensors. Two are placed at the cooler heat sink, one is placed on the control board and one sensor is inside the transformer. If one of this four sensors exceed the maximum temperature-level, the temp. off function will interrupt the AC mains circuit.

2.3.4 Calibration of output voltage (UEP 10)

front side of UEP 10



backside of UEP 10

UEP 10 08 Has been not equipped with +/-12V outputs

Voltages can be set by using the trim-pots on the top of the power supply

APPENDIX A: Technical details UEP 10 08

Linear regulated data UEP 10 (600W):

Input:	230V +10-15%, 48-63 Hz, inrush current limited to <15A, mains filter, fuse protection
Derating:	600W output up to 42°C, with a derating of 2%/K up to 60°C
Noise and ripple:	full load < 0.6mV eff, <3mVpp, 1mV at 80% rated power
Regulation load:	10 to 100% Uout < 0.05%, line ±10%Uout < 0.02%
Recovery time:	load change 10% to 100% < 0.15 ms
Output impedance:	static < 0.2mOhm, dynamic at 100kHz < 0.3 Ohm
Temperature error:	$< 5*10^{-5}$/K
Thermal protection:	overheating protection by thermal sensors (4 fold),
Current limit:	adjusted to rated current
Characteristics:	short circuit protected by fold back characteristic, short circuit current < 3A resp. 1A, reverse bias diodes.

Voltage: overvoltage protection (crow bar), ±6V, ±24V
calibrated at ±7.3V, ±28.5V

Options for power supplies type M: equipped with status-signal and status relay, rearming and inhibit input, power-fail-signal, remote monitoring acc. to CERN-CAMAC-note 46-04

Output voltages, currents and total power:

Outputs	**+6V**	**-6V**		**+24V**	**-24V**	**115 VAC**
UEP 10/88	45A	45A		8A	8A	0.5A

Note: The total Power consumption of the same polarity (+ or -) should not exceed 400W.

example: +6V/45A=270W +6V/40A=240W
+24V/8A=192W +24V/4A= 96W

not allowed: Σ=462W allowed: Σ=336W

APPENDIX B: Technical Documentation, Drawings

Wiring Diagram UEP 10 M,	page 1	1406702
Wiring Diagram UEP 10 M / 55	page 2	1406702
Filter PCB CAP 2, Components		1218255
FAN Cooler UEP 10 E00 BE		1218832
Main Transformer, Terminals UEP 10E17S		798282.B1
Regulator board RGL 03 E03, PCB	page1	1016563
Regulator board, connections	page 2	1016563
Regulator board, trim points	page 3	1016563
Regulator board, components		1004476.02.4
Aux power supply (HSP01) UEP1X/2X		1020269.B0
Aux power UEP1X/2X, components		1020269.B0
Control board UBW 05 E01 (simplified monitoring)		1110756.A5
Control board, components		1110756.A5